A Tale of Two Placentas

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We had not planned to start our day with a detailed examination of afterbirths. Overnight, two of our Soay had delivered up a total of three lambs and, when making our early morning lamb check, we found the five of them in a moist, gurgly jumble in a corner of the maternity ward. It was an endearing scene of neonatal collaboration and camaraderie, with both ewes cleaning all three lambs, and the little ones going for the nipples with a certain disregard for family proprieties. We thought we could tell who belonged to whom and yet . . . we're supposed to be running a genetics operation here at Saltmarsh Ranch; even a whiff of dubiety simply will not do.

One of the lambs bore the characteristics of a Chestnut-sired lamb: a tell-tale pepper and salt head and a tight wavy agouti coat. She was strongly oriented to Carolina, at least most of the time. No real doubt about her. And the one ram lamb was pretty clearly Millie's. He had the beautiful dark copper markings typical of his mother's lambs; he too, was reassuringly attached to mom for the most part. The third lamb, another ewe, was problematic. She seemed to belong to Millie but as we watched she would wobble back and forth between the two udders in an "any-port-in-a-storm" search for milk. Her head seemed too dark for a Chestnut lamb, but she had his more grayish coat with less red in it than a typical Millie lamb. The ewes were no help either. Both were accepting of her attempts to nurse, gurgling and licking her in encouragement.

What to do? Steve was not able to bring his laboratory with him when he traded his professorial white coat and test tubes for knee-high muck boots, so he can't do DNA testing *in situ*. Instead, he did what any self-respecting graduate of the Boy Scientist school of analysis would do in the situation: he sat himself down on a lawn chair with a cup of coffee. I'll let him pick up the story from there.

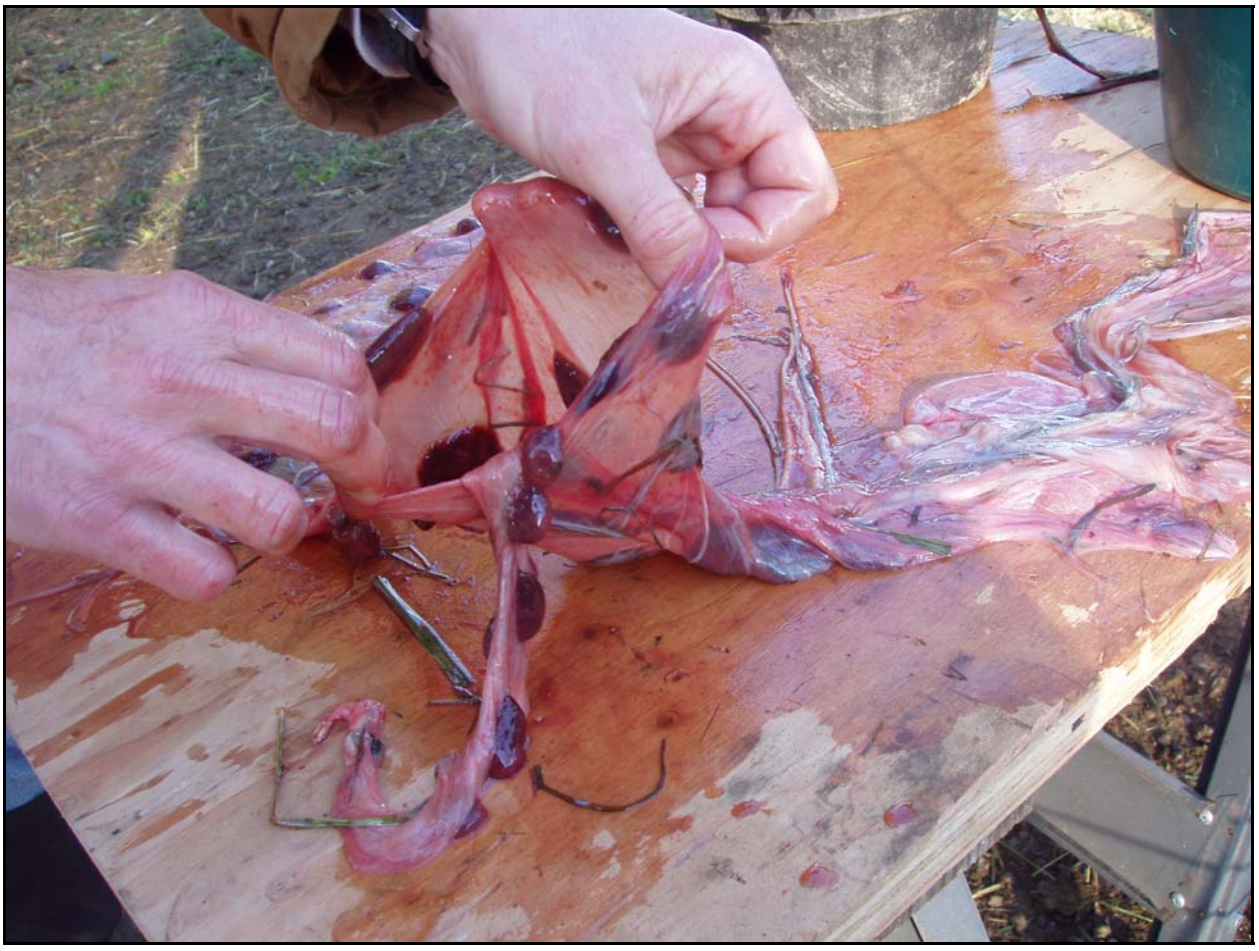
"My first thought was that the scientific approach would be easy – count the placentas as they come out. The ewes weren't so rational. It was nice of them to get right down to business with no further ado, but alas, each ewe squeezed out just one placenta. My experimental protocol assumed there would be two placentas for the twins, but no dice."

"Time for Plan B. My trusted assistant, who doubles as the ranch photographer, fetched a green bucket for Millie and a black bucket for Carolina. What we didn't need was to mix up the evidence. The actual analysis of these warm and slimy specimens is shown in the pictures. The only apparatus I used other than the placenta buckets was warm water and a couple of towels – no instruments, no microscope, no fancy lab equipment of any kind. I first laid out the placenta from Millie and soon found a single set of blood vessels, so it looked as though Carolina had twinned and then one of them had lost its bearings in the confusion of the communal birthing. But to be sure, I laid out the placenta from Carolina. It was much smaller, much smaller, which seemed odd for a two-lamb production. And much more troubling, in spite of a careful search, I could find only one set of fetal blood vessels. Hmm."

"One more time. Back into the black bucket goes the placenta from Carolina and out for the second time out come the contents of the green one. I spread Millie's afterbirth out more carefully and realized that hidden inside the horn that was right side out -- the blood vessels are inside where they are attached to the resident lamb -- was a second set of blood vessels I had missed on first inspection."

Watching Steve painstakingly turn a placenta inside out brought back memories from my years of struggling to turn pantyhose right side out without snagging them. If anyone cares to know, placentas are a lot sturdier. But I digress.

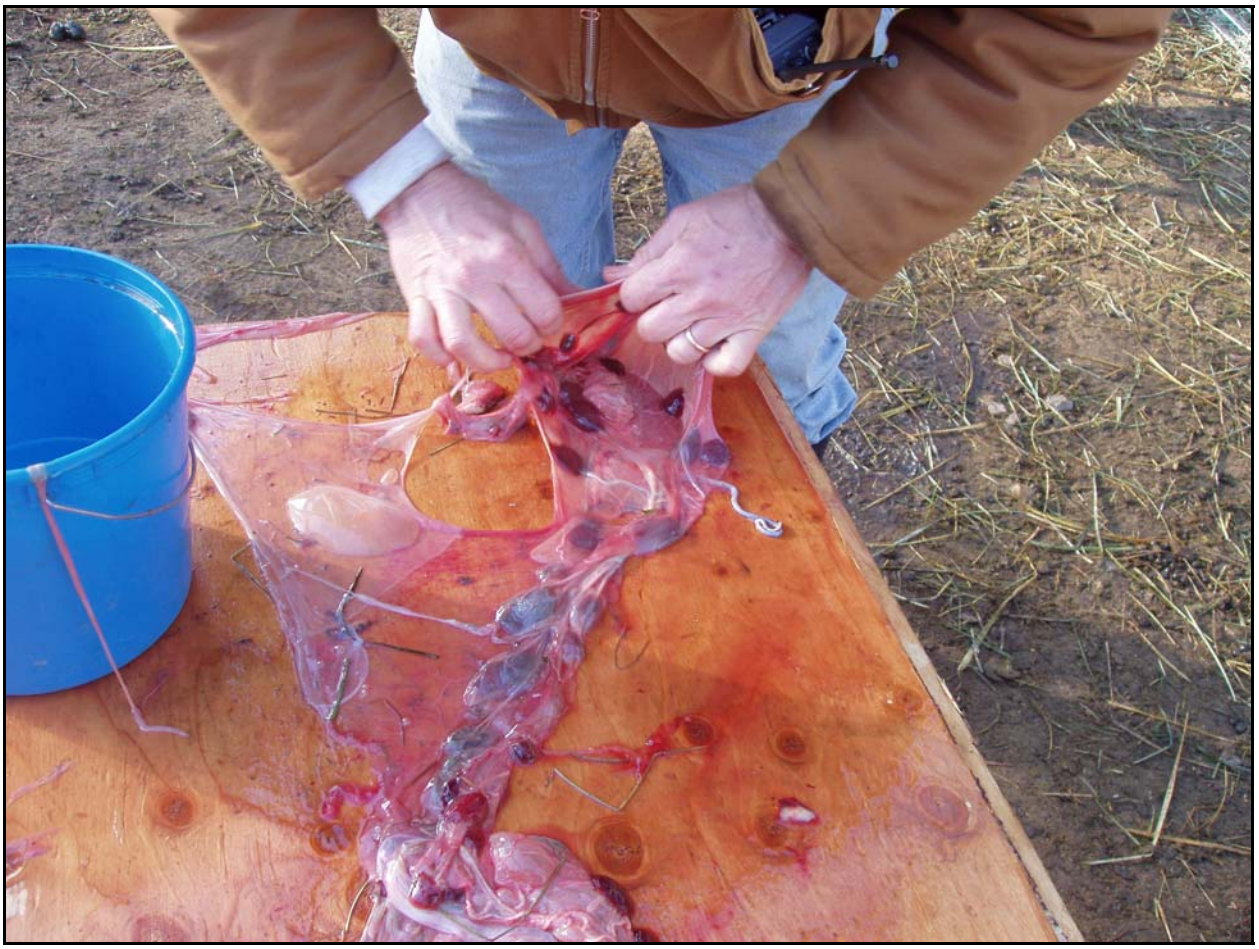
By now you can guess the result. This time Steve easily located two sets of connecting blood vessels, and once he had found them, everything made sense. The much larger placenta indeed belonged to the twins and the twins are Millie's. Further, she looks hollow, whereas Carolina really doesn't look as though she's been through birth. And when we looked up from the placental examination, sure enough, the lambs had sorted themselves out unequivocally and we were comfortable separating the two little families. As soon as we catch our breath, we'll add pictures of Millie, Allspice and Anise, as well as Carolina and Bay, to our photo album on the listserv. You can let us know whether you would have had doubts about who Allspice belonged to.



Steve begins examining the placenta from Millie. Keep in mind the placenta is a sleeping bag for the lamb. The grape-like red shapes (cotyledons) are bunches of little blood vessels that attach the placenta to the lining of the uterus, providing for the exchange of oxygen and nutrients between the ewe and the lamb(s).

When Steve first laid out the placenta from Millie, the right "horn" was wrong side out, revealing the blood vessels that connect the lamb to the uterus. But the left "horn" was right side out, concealing the blood vessels, so Steve didn't realize he was looking at a two-lamb placenta. The veterinarians and physicians who read this no doubt are thinking, "How could he possibly miss that?" Sorry. It's been a long time since Professor Weaver got up close and personal with a placenta.

The placenta from Carolina, much smaller, also has only one set of blood vessels. And yes, Steve did turn the horn at the top wrong side out to double-check for a second, hidden set of blood vessels.



Carefully easing the placenta from Millie apart for a second look. Note the sophistication of the "laboratory" setting.

Here at last are two sets of blood vessels, and thus the twins' shared placenta, from Millie. A couple of additional notes from the unreconstructed professor: All sheep have a "Y"-shaped uterus with two "horns." When there is one lamb, it resides in its placenta in one "horn" of the uterus but the placenta also insinuates itself into the empty horn of the uterus and takes nutrients from that empty half back to the lamb. With twins, one lamb normally develops in each horn of the uterus.